Description

GAME MACHINE

5   Technical Field

This invention relates to game machines such as a pachinko game machine (pinball-like game machine of Japanese origin) comprising a display means for displaying game-related designs and control means such as a microcomputer for controlling the display.

10   Background Art

A type of pachinko (spring-driven steel ball) game machine has been on the market, in which a display means is provided to show variation display of symbols when specific conditions are met (hereinafter called "special symbols"), and advantage is given to the player if the variation display stops

15   at a specific combination of the special symbols. In recent years, many electric display devices are used such as liquid crystal display devices capable of showing various production (dramatic) displays.

Concerning such game machines, the greatest concern of the player is whether the variation display stops at a special game state, the so-

20   called "big hit," a combination of special symbols, favorable for the player. The combination of the special symbols is for example a set of three identical special symbols like "7-7-7." Therefore, the player is to carefully trace visually the special symbols shown as variation display.

However, since the variation display of the special symbols is made at

25   a high speed, actually the player is like visually tracing invisible designs. Also, until the result of stop of special symbols appears, the process is monotonous and not a fun at all, and the player is bored. As the player visually traces the special symbols moving at high speeds, the player may suffer eyestrain.

30   In recent year, arrangements for enhancing the fun of playing have been

put on the market. In one arrangement, a display (pre-big-hit (Reach) production or Reach action) is made separately from the ordinary display of the varying special symbols when a condition of a Reach, where a big hit would happen with one more stop of the special symbol, is reached, so that the player

5   can feel that the time of a big hit is near. In another arrangement, the Reach display is made with a story. However, the fact that the player visually traces the special symbols moving at high speeds until the Reach state is reached remains unchanged.

In still another arrangement, production display is performed by

10   causing character designs to appear before reaching the Reach state.

In such an arrangement for example, in addition to the display of special symbols for determining the occurrence of a special game state using a special variation display device, an animated image of a character playing golf is displayed, and the displayed result of the animated image is made to

15   correspond to the displayed result of the special symbols. For example, during the variation display of the special symbols, an animated image is displayed in which a character performs a series of tee shot actions of golf. If the ball enters the hole, a big hit symbol is displayed and if not, a miss symbol is displayed. In this animated image, the common story of golf is used

20   for different games, and the game to be displayed is switched according to the number of starting up the special symbols.

Still another arrangement of conventional technique is known: While a game is going on with variation display of special symbols (variation display game), a preliminary variation display game is played as interlocked with

25   the variation display game. Concerning the preliminary variation display game, an ornamental display is made in which a stop symbol is extracted when the character design drives out a special symbol for variation display.

In still another arrangement of conventional technique, animated image information constituted to synchronize with the variation display of the

30   special symbol display device is displayed on an image display device. The

animated image shows for example the story from the step of an angler dropping a fishing line to the step of landing a fish, corresponding to the states of big hit, Reach, and miss. Specifically, specific designs such as an octopus, a shark, etc. corresponding to the special symbols defined as the

5   stop symbols of the special symbol display device are made to appear while the variation display is performed with the special symbol display device.

In still another arrangement, it is devised to enhance the player's feeling of expectations: Magnitude of Reach evolution probability indicating whether a Reach demonstration appears or big hit probability is indicated

10 with characters and their combinations caused to appear during the variation display, and the big hit probability is indicated with the Reach demonstration displayed.

With the conventional technique described above, however, the story shown with the animated image is made different only concerning the image

15 corresponding to the finally stopped result of the special symbols, and the story during the variation display remains the same. Therefore, the evolution of the story can be easily predicted and the player becomes bored after viewing for a long time.

From another viewpoint, the displayed contents of the animated image

20 (showing a golf ball missing a hole) are the same whether a miss results from a Reach state or not from a Reach state. Therefore, if the player watches the animated image only, the game comes to an end without the player learning whether a Reach state is reached or not. That is, after all, in order for the player to learn the game state, the player cannot turn the eyes from the

25 monotonously varying display of the special symbols.

Even if plural kinds of animated images are set on the basis of the same story, since a monotonous pattern is repeated, the player gets bored.

According to the another arrangement described above of the conventional technique, since the preliminary variable display game using

30 the character designs is interlocked with the variable display game, after

— 3 —

all, the player cannot turn the eyes from the monotonous variation display.

According to the still another arrangement described above of the conventional technique, since the animated image information is expressed with close correlation with special symbols, namely the determined, stopped designs are expressed with character designs such as octopus or shark, in order to learn the state of the game, it is necessary every time the varying display stops to check the stopped result after watching the display of the animated image information. Besides, no change can be seen in the character design (the angler) before a Reach state is reached, which is monotonous. Moreover, in case a Reach state is not reached because the special symbols on right and left hand sides are not in agreement, the story expressed with the animated image information does not come to an end, and so the player cannot grasp the state of the game by merely watching the animated image information. That is, even if production display is shown, nothing changes in that the player must watch the special symbols that are variation-displayed.

Furthermore, with a game machine performing the varying display continuously for a long time such as a game machine having the function of changing the winning rate in a big hit lottery (variable probability machine), the above-mentioned problems of "eyestrain" and "getting bored with monotonous variation display" become worse. On top of that, since most of the stopped results of the variation display are misses and most of which do not even come to a Reach state, watching the variation display ends up in wasting much effort.

Some of the production displays include those indicating information that is favorable for the player such as "Big-hit probability is high." Some of the players enjoy finding out such a production display during the play. For such players, an explanatory display because of the difficulty in understanding the contents of the production display will detract from the fun of the game.

An object of the invention is to provide a game machine capable of making it possible for a player to reliably learn the game evolution such as a big hit, Reach evolution, and a miss even without watching variation-displayed special symbols, by simply watching production displays.

5   Another object of the invention is to provide a game machine capable of making it possible for a player to grasp production contents without depriving the player of the pleasure of finding specific production display of information beneficial to the player.

10   Disclosure of Invention

A game machine of a first form of the invention is one comprising a display means for displaying a special symbol indicating shifting to a special game state if a variation display stops at a specific state and also displaying game-related production display, and a control means for

15   determining the stopped result of the variation display and controlling the display of the display means according to the determination, the control means being constituted to control the display means to perform production display of producing a scenario from its beginning to the end during the period from the start to the end of the variation display.

20   A second form is characterized in that the end of the scenario indicates whether to shift to a special game state.

A third form is characterized by being constituted to control the display means so that the production display becomes such that the contents of the scenario progress according to the stop timing of the variation

25   display.

A fourth form is characterized by being constituted to control the display means so that the production display becomes such that the contents of the scenario progress irrespective of the stop timing of the variation display.

30   A fifth form is characterized in that the control means is constituted

to change the production display to show the evolution of the contents of the scenario when the game state becomes a Reach state which shifts to a special game state if the variation display stops one more special symbol at a specific stop arrangement.

5   A sixth form is characterized in that the evolution of the contents of a scenario is indicated by changes in the background shown as a production display.

A seventh form is characterized in that the progress pattern of a scenario shown with the production display is different by the type of
10   production designs or combination thereof.

An eighth form is characterized in that the production display suggests moving on to a special game state according to the type of the production design or to an appended design indicated as appended to the production design.

15   A ninth form is characterized in that the display means is constituted with a display zone for the production display greater than a display zone for the variation display of the special symbol.

A tenth form is characterized by comprising; a display means for displaying designs related to the game, and a control means for controlling
20   the display on the display means, said control means performing production display of producing the process from the beginning to the end of a scenario, and controlling the display means to display that the game moves on to a special game state when the end of the scenario indicated with the production display becomes as specified.

25   An eleventh form is a recording medium having a recorded game program characterized in that a function of displaying the production from the beginning to the end of a scenario during the period from the start to the stop of the variation display is added to a function of permitting a player to play a game by displaying a special symbol indicating shifting to a special
30   game state if the variation display stops at a specific state.

A twelfth form is characterized by comprising a display means for displaying a special symbol indicating shifting to a special game state if the variation display stops at a specific state and game-related designs including a production design indicating the probability of shifting to the

5   special game state, said display means performing a suggestion display of relationship between the production design and the probability of shifting to the special game state.

A thirteenth form is characterized in that the suggestion display indicates which of the production designs has a high probability of shifting

10   to the special game state.

A fourteenth form is characterized in that the suggestion display shows designs identical to the production designs or ones relating thereto.

A fifteenth form is characterized in that the suggestion display is performed with an animated image.

15   A sixteenth form is characterized in that the suggestion display is shown when the game is not played or when the variation display of the special symbol is not shown.

A seventeenth form is a recording medium having a recorded game program with a function of permitting a player to play a game while displaying a

20   special symbol indicating shifting to a special game state if the variation display stops at a specific state and displaying game-related designs including a production design indicating the probability of shifting to a special game state, with said function added with a function of performing a suggestion display of relationship between the production design and the

25   probability.

According to the first form of the invention, the control means controls the display means to display the production of a scenario from its beginning to end during the period from the start to the stop of the variation display. Therefore, a production display is possible with which the player can learn

30   the game evolution such as a big hit, a Reach evolution, a miss after a Reach

state, and a miss, without watching the special symbols in variation display. With such a production display, since the player need not concentrate attention to the variation display even when playing a game with variation display for a long period of time, games that do not cause eyestrain or boredom

5   can be provided. Even if most of the games result in misses, the player can play the games with pleasure of watching the evolution of scenario of the production display.

According to the second form of the invention, since the end of the scenario of the production display indicates whether the game shifts to a

10   special game state, the player can easily learn by simply watching the production display the final result of the game displayed in variation.

According to the third form of the invention, since the contents of the scenario of the production display proceed according to the timing of stops of the variation display, the player can grasp the timing of each stop of

15   the variation display by simply watching the production display.

According to the fourth form of the invention, since the contents of the scenario of the production display proceed irrespective of the timing of stops of the variation display, games can be evolved with originality irrespective of the variation display.

20   According to the fifth form of the invention, since the control means changes the production display when a Reach state is reached so that the contents of the scenario evolve, the player can easily learn the occurrence of the Reach state by simply watching the production display.

According to the sixth form of the invention, since the evolution of

25   the contents of the scenario is indicated with the change in the background indicated as production display, the player is likely to notice the evolution of the scenario and can easily learn the change in the game indicated with the variation display by simply watching the production display.

According to the seventh form of the invention, since the progress

30   pattern of the scenario indicated with the production display varies

according to the types of production designs appearing in the production display or their combination, the player can predict to some extent the ensuing game evolution by simply watching the types of the displayed production designs (for example character designs) or their combination from the beginning. Additional fun of anticipating the appearance of production designs leading to scenario evolution favorable for the player is also provided.

According to the eighth form of the invention, the production display suggests the shift to a special game state using the types of the production designs appearing in the production display or using appended designs indicated as attached to the production designs. Therefore, situations or final results of the game indicated with the variation display can be expressed in various ways using the production designs or appended designs.

According to the ninth form of the invention, the display means has a display zone for the production display wider than a display zone for the variation display of the special symbol. Therefore, the player can watch only the production display and enjoy its evolution without being distracted with the variation display.

According to the tenth form of the invention, only the production display of producing the process from the beginning to the end of a scenario is shown, a game machine nonexistent in the past is provided that makes it possible to learn the occurrence of a big hit, a miss, or a Reach state without performing conventional variation display.

The eleventh form of the invention is a recording medium having a recorded game program characterized in that a function of displaying the production of a scenario from the beginning to the end during the period from the start to the stop of the variation display is added to a function of permitting a player to play a game with a special symbol displayed to indicate shifting to a special game state if the variation display stops at a specific state. Therefore, the recording medium with the game program can be used in

home game machines. Also, by installing the program from the recording medium to general purpose computers, such computers may be used as game machines.

According to the twelfth form of the invention, suggestion of the relationship between the production design and the probability of shifting

5 to a special game state is displayed. Therefore, the player can find a specific relationship between the production design and the probability of shifting to the special game state by watching the displayed suggestion. That is, the player can play for a long period of time, without getting bored, with the pleasure of finding out from the displayed suggestions a specific

10 production design having a high probability of shifting to a special game state and with the pleasure of discovering such a specific production design in the versatile production display actually shown.

According to the thirteenth form of the invention, which of the production designs has a high probability of shifting to the special game

15 state is suggested with a display. Therefore, the player can easily find out a production design having a high probability of shifting to the special game state.

According to the fourteenth form of the invention, since suggestion display is shown with the design that is the same as or related to the

20 production design, the player can directly grasp the relationship between the production design and the probability of shifting to the special game state.

According to the fifteenth form of the invention, since suggestion display is shown with an animated image, more concrete suggestion display

25 is possible and the fun of finding out which is the specific production design having a high probability of shifting to the specific game state is enhanced.

According to the sixteenth form of the invention, if suggestion display is shown when no game is played or no variation display of special symbols is shown, for example when a demonstration image is shown, the demonstration

30 image can be utilized as a means for displaying important information related

to games rather than being used as a mere demonstration image. When the suggestion display is shown with the demonstration image in this way, the player can face the game after finding out which of the production designs is the specific one having a high probability of shifting to the special game

5 state, even without understanding the meaning of the production design during the game.

According to the seventeenth form of the invention, it is possible to prepare a recording medium in which a game program is recorded, which program having a function of permitting a player to play a game by displaying

10 game-related designs including the special symbols and the production designs as described above, to which function is added another function of showing a suggestion display of the relationship between the production design and the probability, so that the player can use the program for example in a home game machine to enjoy the same game as with the above-described

15 game machine. It is also possible to install the program from the recording medium to a general purpose personal computer for example and utilize the personal computer as a game machine.

This application is based on Japanese patent applications, No. 11-244279 filed in Japan on August 31, 1999 and No. 11-244280 filed in Japan

20 on August 31, 1999, which are entirely incorporated herein by reference.

This invention will be more completely understood through the following detailed description. Additional application ranges of this invention will become clearer through the following detailed description. However, specific examples in the detailed explanation are preferable embodiments of the

25 invention cited for the purpose of explanation only. For those skilled in the art, it is apparent that various changes and modifications can be made within the scope and spirit of the invention.

The applicant has no intention of presenting to the public any of the described embodiments. Of the disclosed modifications and alternatives,

30 those which may not be included in what is claimed in words shall be part

of the invention under equity.

Brief Description of Drawings

FIG. 1 is a front view of the game board of a pachinko game machine as an embodiment of the invention.

FIG. 2 shows a flow of display on the display screen.

FIG. 3 is a continuation from FIG. 2, showing the flow of display on the display screen.

FIG. 4 shows a flow of display on the display screen in case of "super love-love Reach (pre-big-hit)."

FIG. 5 shows a flow of display on the display screen in case of "direct-to-hotel Reach."

FIG. 6 shows a flow of display on the display screen in case of "date spot Reach."

FIG. 7 shows a flow of display on the display screen in case of "another guy Reach."

FIG. 8 shows a flow of display on the display screen while playing a bit hit game.

FIG. 9 shows Reach evolution rate, big hit probability for every combination of male and female characters.

FIG. 10 shows a scene with background "station plaza."

FIG. 11 shows a scene on the display screen with a background of "seaside park."

FIG. 12 is an overview table of designs representing real intentions.

FIG. 13 is a table of probability and occurrence rate of big hit for every combination of real intention designs.

FIG. 14 is a table of good couples.

FIG. 15 shows demonstration images on the display screen.

FIG. 16 shows another example of demonstration images on the display screen.

FIG. 17 is a block diagram, showing an electric circuit constitution of a pachinko game machine.

FIG. 18 is a flowchart of a main game control process related to a game played with a liquid crystal display device performed with a main circuit

5   board.

FIG. 19 is a flowchart of an interruption process.

FIG. 20 is a flowchart of a special symbol game control process.

FIG. 21 is a flowchart, showing the continuation of FIG. 20.

FIG. 22 is a flow chart of main processing performed with a symbol

10   control circuit board.

FIG. 23 is a flow chart of image processing performed with the symbol control circuit board.

FIG. 24 is a flow chart of production pattern determination processing performed with a symbol control circuit board.

15   FIG. 25 is a table of count value renewal ranges of various types of random number counters.

FIG. 26 is a big hit judgment table.

FIG. 27 is a big hit symbol determination table.

FIG. 28 is a table of determining production groups.

20   FIG. 29 is a Reach state judgment table.

FIG. 30 is a stop symbol determination table.

FIG. 31 is a production pattern determination table (1) for misses without reaching a Reach state.

FIG. 32 is a production pattern determination table (2) for misses

25   without reaching a Reach state.

FIG. 33 is a production pattern determination table (1) for misses after reaching a Reach state.

FIG. 34 is a production pattern determination table (2) for misses after reaching a Reach state.

30   FIG. 35 is a production pattern determination table (1) for big hits.

FIG. 36 is a production pattern determination table (2) for big hits.

FIG. 37 is table of looks of male characters.

FIG. 38 is table of looks of female characters.

5   Best Mode for Carrying Out the Invention

Here will be described a pachinko game machine as an embodiment of the invention.

FIG. 1 is a front view of the game board 10 of the pachinko game machine. A liquid crystal display device 3 as a means for displaying designs related

10 to games is placed in about the center of the game board 10. The liquid crystal display device 3 variation-displays plural symbols expressed with images to show three rows of reels of a slot machine in simulated manner. The variation-displayed symbols are termed "special symbols." The special symbol, if its variation display stops at a specific stop arrangement (such as a stop

15 arrangement "7-7-7" which is termed a "big hit"), indicates a shift to a special game state favorable for the player. In the special game state, to be specifically described later, a big prize hole 5 described later is converted to a favorable state.

The liquid crystal display device 3 also displays various production

20 displays during the variation display of the special symbols. The production display is expressed in various forms of images: An omen production design representing a "big hit probability" of shifting to the above-mentioned special game state or a "Reach evolution probability" of evolving to the Reach state, or a Reach state production design displayed in the Reach state which

25 may shift to the above-mentioned special game state if one more stop occurs. These omen production design and Reach state production design are expressed in various image forms.

In this embodiment, as shown in FIG. 2(a) to be described later, special symbols constituted with stylized numerical symbols etc. are displayed in

30 the display zones 50L, 50C, and 50R in the upper part of the display screen

3a of the liquid crystal display device 3. In other display zones are displayed the above-mentioned omen production designs and Reach production designs as game-related production displays. The special symbols are images, expressed with electric signals, of the symbols on the three reels of rotary

5 reels of a slot machine. The omen production designs and Reach production designs are displayed also with animated pictures and letters etc. as well as with designs. In FIG. 2(a) are shown omen production designs using a male character 51 and a female character 52 with the background of a station plaza. The male character 51 and the female character 52 chat with each other,

10 changes their expressions and physical movements. Evolution from the beginning to the end of a specific scenario is displayed with different situations realized by changing the background. That is, depending on the kind of a scenario along which the production display evolves, the ensuing game result varies, and the contents appearing in the course of the production

15 display suggests probabilities of a big hit and evolving into a Reach state.

The omen production design heralds either that the variation display of the special symbol thereafter becomes a Reach state or that the variation display stops after reaching a Reach state at a specific state indicating a "big hit" such as "7-7-7." The omen production design is constituted to

20 change into various display states.

Therefore, the player can predict to some extent the probability of evolving into a Reach state or the appearance of a big hit thereafter by recognizing along which scenario the contents displayed with the omen production design are evolving and by grasping the development of a story.

25 When a Reach state is reached, the production display is shown with contents of the scenario in the state of having greatly evolved. For example, when two, male and female characters are placed in a different situation with a different background, the player can easily understand that the scenario has evolved greatly and easily recognize that the game has reached a Reach

30 state. The probability of a big hit is made different according to the extent

of evolution. Such a production display will be described later more in detail for specific contents of the display.

In this way, it is arranged that, in case a Reach state is reached, a Reach state production design separate from the omen production design is displayed as a production display for informing the player of reaching that state. The Reach state production design is shown in the course of the evolving story and its display manner is made different according to the big hit probability.

Again referring to FIG. 1, a startup win hole 4 for a game ball to enter and start variation display of the special symbols of the liquid crystal display device 3 is provided below the liquid crystal display device 3. The startup win hole 4 comprises a variable prize device convertible to a first state unfavorable for the player and a second state favorable for the player. It is designed that, when a game ball enters the hole 4 and the second state occurs, a specified number (for example five) of prize balls are dispensed.

The startup win hole 4 has a prize space that can hold a game ball or two even in the first state unfavorable for the player, and so a ball can enter the hole.

An LED display device 2 having seven segments is provided above the liquid crystal display device 3. The LED display device 2 starts a variation display when a game ball passes through passage ball gates 6a, 6b located on the game board 10. When the variation display of the LED display device 2 stops at a predetermined specific state, for example "7," the startup win hole 4 is converted to the second state favorable for the player.

Four LED operation memory lamps 16 are provided around the LED display device 2. The LED operation memory lamps 16 memorizes the number, up to four, of passages of game balls through the passage ball gates 6a, 6b every time the ball passes, and notifies the player of the number of variations, possible at that time, of the LED display device 2. The fifth and later passages are not counted and become invalid.

Four startup win memory lamps 15, two for each of right and left sides, are provided above the liquid crystal display device 3. This is arranged to memorize the number of wins, up to a limit of four, with balls entering the startup win hole 4 while the variation display is being performed with the

5   liquid crystal display device 3, and to notify the player of the number of variation displays that can be shown on the liquid crystal display device 3 at that time by causing the startup win memory lamps 15 to be on. Therefore, in the state of all the four lamps 15 being lit, a ball entry into the startup win hole 4 is invalid as a variation display startup condition.

10   A big win hole (so called "attacker") 5 convertible to either a closed state disadvantageous to the player or an open state advantageous to the player is provided below the startup win hole 4. The big win hole 5 comprises a variable win device of a type having doors and convertible to an open state advantageous to the player when the variation display of the special symbols

15   on the liquid crystal display device 3 stops to show a specific combination of the special symbols, a "big hit." It is arranged that when a game ball enters the hole 5, a specified number (for example 15) of prize balls are dispensed.

The afore-mentioned special game state is the game state of permitting

20   16 rounds of a big hit game with the big win hole 5 open until 10 balls enter the hole or 30 seconds elapse. However, in order to play a next round after the first round of big hit game is over, a specific condition, generally called "V win" must be met.

Here, the big win hole 5 is constituted with plural win holes. The V

25   win is the case in which a game ball enters specific one of the plural win holes. The specific win hole is usually set in the center of the big win hole 5.

On the game board 10 are further provided, pin wheels 12a, 12b, general win holes 13a, 13b, 13c, 13d, 13e, 13f for dispensing five prize balls to

30   the player for every entry of a win ball, and board side lamps 14a, 14b.

The contents of display on the display screen 3a are described below using specific examples.

When a game is started with the liquid crystal display device 3, variation display of specific symbols begins on the display zones 50L, 50C, and 50R of the display screen 3a as shown in FIG. 2(a). At the same time, a production display begins to produce a scenario.

FIG. 2(a) shows the state immediately after the variation display of the specific symbols begins. A production display is shown as follows: A background scene of a station plaza is shown on the display screen 3a. Next, a male character 51 as an omen production design comes into the scene from the left of the display screen 3a, and a female character 52 from the right. And as shown in FIG. 2(b), the display changes to show both characters 51 and 52 standing close to each other.

After that, as the scenario evolves, attachment designs attached to the production design are shown. For example as shown in FIG. 2(c), when the variation display in the left display zone 51L stops, a word design 53a representing the words the male character 51 speaks to the female character 52 and a true (real) intention design 54a not necessarily in agreement with the contents of the word design 53a are shown respectively as the attachment designs. Here, the word design 53a of the male character 51 is shown as "You wanna sleep with me, yeah?" and the true intention design 54a shows that the true intention of the male character 51 is almost the same as the contents of the word design 53a.

In succession as shown in FIG. 2(d), when the variation display in the right display zone 51R stops, a word design 55a representing the words the female character 52 speaks back to the male character 51 and a true intention design 56a are shown respectively as the attachment designs. Here, the word design 55a of the female character 52 is shown as "That's what I'm gonna say!" and the true intention design 56a shows that the true intention of the female character 52 is almost the same as the contents of the word design 55a.

On the contrary, in some cases, the true intention design is different in contents from the word design, namely the words do not in agreement with the true intention. Such a case is shown for example in FIG. 2(e) in which the true intention design is 56b when the true intention design 56a is shown.

5 When the word design is in disagreement in the contents with the true intention design, the big hit probability thereafter is low.

Here, various patterns as shown later in FIGs. 31 to 36 (production pattern determination table) are prearranged for the contents of the word designs. Therefore, as for the contents of the word designs shown,

10 conversations of the male and female characters are not necessarily going on smoothly under mutual understanding, namely consistent, as shown in FIG. 2 (d). The contents of the word designs show big hit probability and Reach probability. When the conversation between the male and female characters is consistent as shown in FIG. 2 (d), the big hit probability and Reach

15 evolution rate are high.

Various patterns are preset to the true intention designs, specifically 20 patterns, H1 to H20, as shown in FIG. 12. In FIG. 2 (d), the true intention of the female character 52 is shown with the true intention design 56a (H14 in FIG. 12) indicating that the true intention of the female character is

20 almost the same as the contents of the word design 55a. However, if the true intention design H19 of FIG. 12 is shown in FIG. 2 (d), it cannot be considered to be in agreement with the contents of the word design 55a. In that case, the big hit probability or Reach evolution rate is low.

However, even if the conversation between the male and female characters

25 is inconsistent, or if the true intention design 56a is inconsistent with the word design 55a in contents, a big hit may occur depending on the scenario evolution. Therefore, the player's attention to the production display is not distracted.

As shown in FIG. 2 (d), if a Reach state is reached with the same stop

30 symbols in the right and left display zones 50R and 50L, the contents change

according to the evolution of the scenario. However, if the stop symbols in the right and left display zones 50R and 50L are not the same each other as shown in FIG. 2 (e), a miss results. In case of such a miss, the word design 55b shows a harsh contents such as "Go away, bozo!"

As described above, the contents of the attachment designs such as the word design and the true intention design greatly influence the expectations of the player for a big hit. Each attachment design is shown simultaneously with the stop time point of the variation display, and in case their contents are consistent, the stop-displayed special symbols also show a Reach state. Namely, it is constituted that the game situation can be accurately grasped by only watching the attachment design display, without paying attention to the special symbols moving at high speeds.

When the game comes to a Reach state, the production display changes, after displaying "Reach" as shown in FIG. 3 (f), to that of an evolved, completely different state of the scenario. Therefore, the player not only can easily recognize from the production display the occurrence of a Reach state but also can have enhanced expectations for big hits to follow.

The scenario evolves roughly in four patterns; "super love-love Reach," "direct to hotel Reach," "date spot Reach," and "another guy Reach." Although these evolution patterns have different contents, the end of the scenario is whether the two, male and female characters finally check in the hotel. If the final display indicates that the male and female characters check in the hotel, the game results in a big hit with the three display zones 50L, 50C, and 50R showing the same designs. If the male and female characters do not check in the hotel, the game results in a miss.

FIG. 4 shows a scenario evolution of the above-mentioned "super love-love Reach." In this "super love-love Reach" state, many heart marks are shown in the background, and the scenario evolves that the male and female characters go directly to and check in the hotel. That is, once the game results in this "super love-love Reach" state, thereafter the game results

in a big hit with a probability of 100 %. And after showing a big hit image of FIG. 4 (h3), the display changes to a big hit game image.

Referring again to FIG. 3, in case the scenario evolves to a state other than the "super love-love Reach," there may be a case as shown in FIG. 3 (g) in which large letters are shown in the center of the display screen 3 (a) after reaching to a Reach state. Here, an expression "I'm gonna make it tonight!" is shown. To this phrase too, various patterns are allocated which correspond to the words before reaching a Reach state as shown in FIGs. 31 to 36 (production pattern determination table). These phrases represent the player's zeal or spirit for the future evolution of either of the characters coming into the scene. In case these phrases are shown, the big hit probability is higher than usual and so the player can hope further evolution of the scenario.

FIG. 5 shows a scenario evolution in the "direct to hotel Reach" case. In this "direct to hotel Reach" case, like in FIG. 4, the scenario evolves that the male and female characters go direct to a hotel. If the characters check in the hotel without any happening, the game results in a big hit as shown in Fig. 5(j3). However, unlike the above case of "super love-love Reach," they do not necessarily check in the hotel.

For example, in the scene shown in FIG. 5 (j4), if the female character in front of the hotel expresses the phrase "I'm leaving, then." and disappears, the game results in a miss. As a matter of course, the special symbols in the stopped state are not the same each other.

Even in the case a big hit like FIG. 5 (j3) as the final result of the scenario evolution is to be shown, there may be a case in which the display of FIG. 5 (j5) is shown and the two characters do not smoothly check in the hotel. In that case, the player frets about the game evolving to a big hit. With such a scenario evolution along with a display causing fret about the game evolving to a big hit, the player's mind is mixed with expectations to a big hit and anxiety about a miss, and so the tension of the player is

enhanced.

FIG. 6 shows the scenario evolution of the case of the above "date spot Reach." In this "date spot Reach" case, various dating spots are shown where the male and female characters 51, 52 visit. In this FIG. 6, scenes are shown in which the male and female characters 51, 52 pass in front of a rahmen (Chinese noodle) shop (FIG. 6 (k1)), enter a bar (FIG. 6 (k2)), and come out of the bar (FIG. 6 (k3)). The scenario evolution thereafter is the same as that of the "direct to hotel Reach" case shown in FIG. 5.

In FIG. 6, there may be a case in which the words of the female character 52 are shown with "I don't wanna eat here!" as shown in FIG. 6 (k4). In that case, the game later results in a miss.

FIG. 7 shows the scenario evolution of the above "another guy Reach" case. In this "another guy Reach" case (FIG. 7 (m1)), scenes are shown in which male and female characters 51, 52 pass in front of various dating spots while another male character 57 comes walking from the opposite direction. After that, if the another male character 57 simply passes by, the display shifts to that of FIG. 5 (j2), namely the above "direct to hotel Reach," and the game results in a big hit. That is, in case the another male character 57 simply passes by, it indicates that the big hit probability is 100 %.

However, there may be a case in which the female character 52 says "Sorry. I have a date with that boyfriend." as shown with the word design 55e in FIG. 7 (m2), and leaves with the another male character 57 as in Fig. 7(m3). This corresponds to a miss, with the special symbols not in agreement with each other in their stopped state, and the game with this display screen 3a is over.

When a game played with the liquid crystal display 3 results in a big hit, the game becomes the special game state during which a display as shown in FIG. 8 begins on the display screen 3a. In this special game state, as described before, the big hit game in which the big win hole 5 is converted to a favorable state may be played up to 16 rounds. Here, the display on the

— 22 —

display screen 3a is changed at every turn of the round to notify the player of the turn of the round.

For example, in the special game state, a display is made as shown in FIG. 8 (p1) followed by a round display as shown in FIG. 8 (p2) to notify that the first round of the big hit game is going on. With the round display shown in FIG. 8 (p2), the screen shows an introduction of a female character coming into the scene of a production display.

After that, the display changes to introduce each of the other female characters in succession at every turn of the round. The female character introduction screen displays all the female characters except Gloria and Sandra shown in FIG. 9 (to be described later) up to the seventh round of the big hit game.

When the game enters the eighth round, the display state of each round displays the female character and her favorite male partner (a male character that makes a best couple later). This round display shows all the female characters except Gloria and Sandra shown in FIG. 9 (to be described later) up to the 14th round of the big hit game.

In the 15th round, along with the female character display, a round display with letters is made as "Gotcha, two more rounds to go." In the final 16th round, along with the female character display, a round display with letters is made as "It's the final round, watch out, hold on."

Here, FIG. 9 shows the combinations of male and female characters appearing during the production display; and big hit probability, Reach evolution rate, and appearance rate when the combinations come into the scene during the production display. In the production display of this embodiment, two, male and female characters appear as the scenario goes on. As shown in FIG. 9, plural types of male and female characters appear and their combinations (types of couples) are made to represent different Reach evolution rates and big hit probabilities.

In FIG. 9, the male-female combinations indicated with black hearts ((I)

to (VII)) are called "the best couples." Their Reach evolution rate is 100 %, namely the game evolves to a Reach state with a probability of 100 %, and their big hit probability is 15.182 % which is higher than other couples in probability of evolving to a big hit.

5   Here, the couple appearing in the display examples in the above FIGs. 2 to 8 is the combination of the male character "Bob" and the female character "Cathy" in FIG. 9, which is one of the best couples.

The male-female combinations indicated with white hearts are called "normal couples," with a Reach evolution rate of 18.575 %, and a big

10   hit probability of 0.391 %, both lower than those of the best couples.

The male-female combinations indicated with broken hearts are called "worst couples," with a Reach evolution rate of 2.002 %, namely little probability of evolving to a Reach state, and a big hit probability of a very low 0.020 %. Here, as seen in FIG. 9, the female characters "Gloria"

15   and "Sandra" are not included in any of the best couples or the normal couples. The best couples and the normal couples are constituted with combinations of seven female characters, other than "Gloria" or "Sandra," and specific male characters. Therefore, the contents of the round display shown during the special game suggest not only the ordinal number of the round but also

20   the characters constituting the best couples of high probabilities of big hits.

Plural backgrounds are preset to the scene where the male and female characters appear. An example of the background is a "station plaza" as shown in FIG. 10, and another is a "seaside park" as shown in FIG. 11. Changing

25   the scene setting by the use of different backgrounds makes it possible to evolve the scenario according to respective backgrounds, increase the number of variations of the production display, and enhance the fun of the game.

There may be a case as shown in FIG. 10 in which a train design 58 passes across the background of the scene where the male and female characters appear,

30   or a case as shown in FIG. 11 in which a dog design 59 appears. These are

the omen production designs indicating the Reach evolution rate and the big hit probability. In this embodiment, the passage of the train design 58 and the appearance of the dog design 59 are very rare. Therefore, if they appear, the big hit probability is 100 %.

5   The true intention designs 54a and 56a are arranged to produce different probabilities of big hit depending on combinations they make. FIG. 12 is an overview table of the true intention designs shown as the production display. FIG. 13 shows combinations of the true intention designs shown in FIG. 12 and their probabilities of big hit. As shown in FIG. 13, when any combination

10   corresponding to the affectionate rank is shown on the production display, the big hit probability is 2.47 %. When any combination corresponding to the date rank is shown on the production display, the big hit probability is 0.28 %. When any combination corresponding to the no-way rank is shown on the production display, the big hit probability is 0.07 %.

15   According to FIG. 13, any combination in the affectionate rank or in the date rank is constituted with true intention designs related to each other to some extent. Any combination in the no-way rank is constituted with true intention designs having nothing to do with each other. The case of FIG. 2 (d) described before corresponds to the combination 1 (H14 + H14) of the

20   affectionate rank with a high probability of big hit. The case of FIG. 2 (e) corresponds to the combination 6 (H14 + H19) of the no-way rank with a low probability of big hit.

As described above, the production display makes it possible to completely grasp the contents of the game played on the liquid crystal display

25   device 3 by simply watching the scenario evolution shown with the production display. Therefore, there is no need any more to watch the special symbols displayed to vary at high speeds.

The pachinko game machine of this invention is further arranged to show various demonstration displays (hereafter `demo displays´ for short) when

30   no variation display is shown on the liquid crystal display device 3. The

demo display not only shows the flow of the entire game played on the liquid crystal display device 3 but includes important information related to the game.

This demo display shows suggestion of relationship of various 5 production displays appearing during the variation display relative to the Reach evolution rate and the big hit probability. Specifically the display shows the omen production designs constituted with the male and female characters, and suggests the presence of strong relationship between the omen production designs and the Reach evolution rate and the big hit probability.

10 As described above, the omen production design shown with the combination of the male and female characters of the best couple has very high Reach evolution rate and high big hit rate. Here, that the seven best couples ((I) to (VII) in FIG. 9) have very high probabilities of Reach evolution and big hit is implicitly notified by the random display of the 15 couples during the demo display. That is, the demo display implicitly notifies the player of important information related to the game.

Therefore, the player, seeing the demo display repeatedly, is impressed with the couple of the characters appearing in the scene. As the player continues playing, the player becomes aware that the impressed couples are 20 high in the Reach evolution rate and the big hit probability, and can have additional fun of anticipating the appearance of the best couple during the variation display. That is, notifying the player of the best couple not directly but implicitly, additional fun of finding information advantageous to the player is provided and the pleasure of the game is enhanced.

25 FIG. 14 shows combinations of the male and female characters for the best couples shown in FIG. 9. The best couple (I) is the combination of the male character "Bob" and the female character "Cathy," the best couple (II) is "Larry" and "Jean," the best couple (III) is "Alex" and "Mary," the best couple (IV) is "Ted" and "Ann," the best couple (V) is "Paul" and "Martha," 30 the best couple (VI) is "Bruce" and "Cindy," and the best couple (VII)

is "Mark" and "Karen." These best couples appear randomly in the demo display.

Specific situations of the demo display in which the above best couples ((I) to (VII) in FIG. 9) appear are shown in FIGs. 15-D1 to 15-D4. Here, a scene with a station plaza as a background is displayed on the display screen 3a and the above best couples pass right and left across the scene. As shown in this FIG. 15, the contents of the display is likely to be overlooked by the players who do not know the meaning of the best couples. However, as the play goes on and the meaning is gradually understood, the contents of the demo display become very interesting to the player.

The female characters "Gloria" and "Sandra" without partners to make up the best couples shown in FIG. 9 are supposed to pass by themselves during the demo display. That the female characters "Gloria" and "Sandra" pass by themselves implies a very low probability of a big hit, which the player does not want.

For those players who become aware that the demo display is implying important information on the game, additional pleasure is provided to seek more advantageous information. For example, in FIG. 15-D5, the train design 58 passes through the background during the demo display, and in FIG. 16-D6, a dog design 59 appears in front of the background during the demo display. Since the train design 58 and the dog design 59 correspond to the big hit probability of 100 % as described above, a new fun of play, namely the player's finding those, is added.

As for beginners, if they become aware at an early stage that the demo display is suggesting important information on the game, they can face the game with adequate knowledge of the production display without acquiring much experience.

The above demo display on the liquid display device 3 may alternatively arranged to be shown at specific time intervals when no game is played on the liquid display device 3, or on demand by the player. Further alternatively, it may be arranged that the demo display is started when no game is played

on the liquid display device 3 continuously for a specific period of time, namely when the symbol variation is not made continuously for a specific period of time, and that the demo display is finished upon starting the game on the liquid display device 3.

5   FIG. 17 is a block diagram of an electric circuit part of the pachinko game machine of the invention.

As shown in FIG. 17, the electric circuit part of the pachinko game machine of the invention is constituted with a main circuit board 30, a relay circuit board 34, a symbol control circuit board 31, a voice control circuit

10   board 32, and a prize ball control circuit board 33.

The main circuit board 30 is constituted about a microcomputer with a central processing unit (CPU), a read-only memory (ROM), and a random access memory (RAM), readable and writable memory means.

The main circuit board 30 is connected to the relay circuit board 34

15   to which are connected the following components; a passage ball sensor 20 as a game ball detecting means for detecting game balls passing through the passage ball gates 6a and 6b described before, a start win ball sensor 22 for detecting balls entering the start win hole 4 described before, a big win ball sensor 25 for detecting balls entering the big win device 5 described

20   before, a win ball sensor 21 for detecting balls entering the general win holes 13a, 13b, 13c, 13d, 13e, and 13f, an ejected ball sensor 23 for detecting balls ejected from a ball ejector (not shown), a return ball sensor 24 for detecting balls ejected but returned without reaching the game board. To the relay circuit board 34 are further connected actuators; an LED display device

25   2, a lamp display device 41 for connection to board side lamps 14a and 14b, the start win hole 4, and the big win device 5.

When the above sensors detect balls, their detection signals are inputted to the CPU in the main circuit board 30 to operate and control the respective actuators according to the input signals. Control orders are also

30   transmitted to the symbol control circuit board 31, to the voice control

circuit board 32, and to the prize ball control circuit board 33.

When a game is being played, if the passage ball sensor 20 detects a game ball passing through the passage ball gates 6a or 6b, and a detection signal is outputted, the microcomputer in the main circuit board 30 judges

5   a win in response to the detection signal, and controls the display on the LED display device 2 according to the judgment result.

When the start win sensor 22 detects a ball entering the start win hole 4 and outputs a detection signal, the microcomputer in the main circuit board 30 transmits a control signal to the symbol control circuit board 31 to carry

10   out various settings for the game on the liquid display device 3 according to the detection signal, and controls the liquid display device 3 according to the judgment with the symbol control circuit board 31. Here, the symbol control circuit board 31 comprises, separately from the main circuit board, a CPU, a ROM, and a RAM. Control programs for the game played on the liquid

15   display device 3 and graphic data necessary for the game are stored in the ROM in the symbol control circuit board 31.

Based on the above detection of the game ball with the start win sensor 22, the microcomputer in the main circuit board 30 makes a judgment if the game resulted in a big hit. In case the judged result is a big hit, the big

20   win device 5 is converted to the open state with the doors of the big win device 5 opened to facilitate game balls to enter.

The voice control circuit board 32 is provided with various voice data and produces voices with the speaker 40 according to control orders transmitted from the main circuit board 30.

25   The prize ball control circuit board 33 operates a prize ball device 43 according to control orders transmitted from the main circuit board 30 according to each type of win, and dispenses game balls.

The control process for the games played with the liquid crystal display device 3 using the main circuit board 30 and the symbol control circuit board

30   31 is described below in reference to the flowcharts shown in FIGs. 18 to

— 29 —

24.

The game control process shown in FIGs. 18 to 24 is performed with the main circuit board 30.

With the main circuit board 30, a main game control process (ST1 to ST7) shown in FIG. 18 is repeated and also periodical interruption process (ST10 to ST20) shown in FIG. 19 is performed at specific time intervals (for example every three milliseconds) on condition that an interruption permitting flag is set.

The flow of the main game control process shown in FIG. 18 is described below:

ST1: Set an interruption permitting flag.

ST2: Renew the random number counter for the stop symbol determination and the random number counter for the Reach judgment.

The stop symbol determination random number counter is for extracting stop symbol determination random numbers used to determine the stop arrangement with the liquid crystal display device 3 when a miss is determined in the above big hit judgment, and renews count values within the range of 0 to 11 shown in FIG. 25. The renewal process is arranged to start from 0 increasing by 1 up to the upper limit value of 11 (hereafter called `count-up´) and again starts counting from 0 up. Incidentally, the stop symbol determination random number counter is constituted with three counters; a left stop symbol determination random number counter, a middle stop symbol determination random number counter, and a right stop symbol determination random number counter, to perform the renewal process individually.

The Reach judgment random number counter is for extracting the Reach judgment random numbers used to determine whether or not the variation display of the special symbols is made to the Reach state in case of a miss, and renews count values within the range of 0 to 9 shown in FIG. 25. That is, the renewal process is arranged to count from 0 up to the upper limit

value of 9, and again from 0 up.

ST3: Judge if a control command for the error check process is being transmitted. If yes, return to the above step ST1; if no, go to the process of ST4.

ST4: Generate a command for the error check process.

ST5: Perform error check process according to the command generated in ST4.

ST6: Judge if error is occurring. If yes, return to ST1. If no, go to the process ST7.

ST7: Perform the special symbol game control process shown in FIGs. 20, 21 to be described later. As described before, periodical interruption process is performed according to the process flow of ST10 to ST20 shown in FIG. 19.

ST10: Retract all the registers.

ST11: Perform renewal process with the big hit judgement random number counter, the big hit symbol determining random number counter, and the production group determining random number counter.

The big hit judgment random number counter is for extracting the big hit judgment random numbers used to determine whether the game result with the liquid crystal display device 3 is to be made a big hit (big hit judgment) in which the same special symbols appear, and renews count values within the range of 0 to 334 shown in FIG. 25. That is, the renewal process is arranged to count from 0 up to the upper limit value of 334, and again from 0 up.

The big hit symbol determining random number counter is for extracting the big hit symbol determining random numbers used to determine the stop arrangement with the liquid crystal display device 3 when the above big hit judgment results in a big hit, and renews count values within the range of 0 to 11 shown in FIG. 25. That is, the renewal process is arranged to count from 0 up to the upper limit value of 11, and again from 0 up.

The production group determining random number counter is for

— 31 —

extracting the production group determining random numbers used to determine
the production group to be described later, and renews count values within
the range of 0 to 1023 shown in FIG. 25. That is, the renewal process is
arranged to count from 0 up to the upper limit value of 1023, and again from
0 up.

ST12: Perform renewal process with each timer.

ST13: Upon detecting input signals from various sensors such as the
passage ball sensor 20, the win ball sensor 21, and the start win ball sensor
22, perform processes according to the input signals. For example, in case
an input signal from the start win ball sensor 22 is detected, whether the
start win memory number is less than the upper limit value (above-mentioned
four) is judged. If below the upper limit value, the count values renewed
respectively with the big hit judgment random number counter, the big hit
symbol determining random number counter, and the production group
determining random number counter are extracted as the random numbers and,
transferred to and stored in the RAM of the main circuit board 30.

ST14: Perform a process related to the display with the LED display
device 2 (this is called "ordinary symbol process"). In this ordinary symbol
process are performed a win judgment with the LED display device 2 and a
display control of the LED display device 2 based on the judgment result.

ST15: Perform decoration control process of turning on, off, and
flashing various LEDs according to the game state.

ST16: Perform prize ball dispensing process in response to requests for
dispensation requested as a result of game balls entering the win hole.

ST17: Perform error judgment process if various errors have occurred
in the game machine.

ST18: Perform the process of transmitting control commands to the symbol
control circuit board 31, etc.

ST19: Reset each register.

ST20: Set an interruption permitting flag.

As shown in FIG.20, a special symbol game control process judges whether or not any startup prize is stored (ST30). When it is judged that any startup prize is not stored, following processes are performed.

A demonstration display switching timer for governing the switching timing between the demonstration display in the liquid crystal display device 3 and the game in the variation display of special symbols (hereinafter referred as "ordinary game), counts the predetermined time duration to judge if an order to switch to the demonstration display is outputted (ST31). If it is judged to output the switching order, then it is judged whether the demonstration display is in display state (ST32). If the demonstration display is in display state, the process switches the state to the ordinary game (ST33) and if in the ordinary game state, then changes to the demonstration display (ST34).

If it is judged at ST30 that a memory of the startup prize is stored, then the following processes are performed.

The random number for big hit judgment which is stored in RAM at ST13 is read, and it is then judged whether or not in the big hit state, using a big hit judgment table stored in a ROM, as shown in FIG.27 (ST35). In the case if the random number read for big hit judgment is "7" it is judged as big hit.

When the big hit judgment is provided at ST35, the random number for big hit symbol determination which is stored in RAM at ST13 is read, and the big hit symbol is determined from the big hit symbol determination table stored in the ROM, as shown in FIG.27 (ST41). As shown in this FIG.27, in the embodiment twelve types of special symbols are provided. The big hit is a stop arrangement in which three of each special symbol are aligned. The data of these symbols are in turn stored in a ROM in the symbol control circuit board 31.

When the big hit symbol is determined, a production group determination table for big hit (FIG.28C) is selected from three production group

determination tables stored in the ROM, as shown in FIG.28 and the random number for production group determination which is stored in the RAM at ST13 is used to determine the production group required to determine the production display (ST42).

When the judgment of miss is provided at ST35, the random number for Reach judgment which is stored in the RAM at ST13 is read, and it is determined whether or not in Reach state (whether or not the variation display is to be switched to the pre-bi-hit state), using the Reach judgment table stored in the ROM, as shown in FIG.29 (ST36).

When the Reach judgment is provided at ST36, the random numbers for left side stop symbol determination, central stop symbol determination and right side stop symbol determination which are stored in the RAM at ST13 are read, and the stop arrangement of the special symbol is determined from a left side stop symbol determination table, central stop symbol determination table and right side stop symbol determination table (ST39). In this determination process, the left side stop symbol is firstly determined and the same symbol is then determined for the right side stop symbol. If the symbol determined from a random number for the central stop symbol determination is identical to the left side and right side stop symbols, the central stop symbol is changed to one fed by one frame.

If a stop arrangement of miss after reaching a Reach is determined, then a production group determination table (FIG.28B) for misses after reaching a Reach is selected, as shown in Fig.28 and the random number for production group determination which is stored in the RAM at ST13 is used to determine the production group (ST40).

If the judgment of miss without Reach is provided at ST36, as is the case with ST39, the random numbers for left side stop symbol determination, central stop symbol determination and right side stop symbol determination which are stored in the RAM at ST13 are read to determine the stop symbol. Different from the determination process in ST39, the left side and the

central stop symbols are firstly determined from random numbers for left side and central stop symbol determinations. If the right side stop symbol determined from a random number for the right side stop symbol determination is identical to the left side stop symbol, the right side stop symbol is changed to one fed by one frame (ST37).

If a stop arrangement of miss without reaching a Reach is determined, then a production group determination table (FIG.28A) for misses without reaching a Reach is selected, as shown in Fig.28 and the random number for production group determination which is stored in the RAM at ST13 is used to determine the production group (ST38).

As described above, when the stop arrangement of special symbol is determined, a symbol variation command is generated to control the liquid crystal device for displaying on the basis of such determination (ST43) and then the symbol variation command is transmitted to the symbol control circuit board 31 (ST44).

Now, entering a flow chart in FIG.21, it is judged whether or not a big hit is provided (ST45). If judged as a miss, the process goes to ST53 described hereinafter in details. If judged as a big hit, then a big hit fanfare process is performed to control the sound control circuit board 32 for outputting sound (big hit fanfare) which is generated in a loud speaker 40 to notice the big hit (ST46).

Then, a round display switching timer for governing the timing when an ordinary game state is changed to a round display of a big hit state with the liquid crystal display device 3, counts predetermined time duration to perform the switching of the ordinary game to the round display (ST47).

A big hit game time check process for governing the execution time (30 sec) for one round of a big hit at a big prize hole 5 and for governing the latency for switching of the round display is performed (ST48). As a result of the check process, if the lapse of the execution time duration of one round of the big hit state is verified, the flapper of the big prize hole 5 is

processed to close. If the lapse of the latency for the switching of the big hit state is verified, then the flapper of the big prize hole 5 is processed to open (ST49).

Following ST49, it is judged whether or not the big prize hole 5 is being opened (ST50). When it is opened, the process returns to ST48 process to continue the big hit state. When it is not opened, the process judges if the V win described before is established (ST51). If the V win is established then the process returns to ST48 process to continue the big hit state. If the V win is not established then the bit hit state is completed (ST52).

And the working area of the RAM which has been used for the special symbol game control process is reset (ST53).

FIG.22 is a flow chart, showing a main process performed by the special symbol control circuit board 31.

The count value of the random number counter for extracting a random number for production pattern determination which is used for determining the production pattern of a production display described hereinafter is renewed in a range between 0 and 127, as shown in FIG.25 (ST60).

Then, it is judged whether or not a symbol variation command is received from the main circuit board 30 (ST61). If the symbol variation command is received, a command receipt flag is set (ST62).

And, it is judged whether or not in error state (ST63). If not in error state, image processing is performed (ST64).

Referring to a flow chart in FIG.23, the image processing will be described hereinafter.

If in big hit state ("YES" at ST70), then it is judged at ST62 whether or not the command receipt flag is set (ST71). If not set, the round display is kept to be in display state (ST74). If the command receipt flag is set, then an image to be displayed in the round display is set (ST72) according to the symbol variation command received from the main circuit board 30. After canceling the command receipt flag (ST73), the round display process is

performed according the setting (ST74).

If in demonstration display state ("YES" at ST75), then it is judged whether or not the command receipt flag is set (ST76). If not set, the demonstration display is kept to be in display state (ST79). If the command receipt flag is set, then an image to be displayed in the demonstration display is set (ST77) according to the symbol variation command received from the main circuit board 30. After canceling the command receipt flag (ST78), the demonstration display process is performed according the setting (ST79).

If in an ordinary game state ("YES" at ST80), then it is judged whether or not the command receipt flag is set (ST81). If not set, the variation display and production display are kept to be in display state (ST84). If the command receipt flag is set, then variation display related setting for the special symbol in the ordinary game (ST82) and the production pattern determination process (ST83) are performed according to the symbol variation command received from the main circuit board 30. After canceling the command receipt flag (ST84), the ordinary game process (display process for the variation display and production display) is performed (ST85).

Referring to a flow chart in FIG.24, a production pattern determination process performed at ST83 will be described hereinafter.

Based on the production group which are determined at ST38, ST40 and ST42 and contained in the symbol variation command received from the main circuit board 30, one of the production pattern determination tables in FIG. 31 through FIG.36 is selected to determine the production pattern to be displayed as a production display.

If the production group 0 is selected ("YES" at ST86), in other words, in the state of a miss without reaching a Reach, as shown in FIG.28, a production pattern determination table (1) for misses without reaching a Reach in FIG.31 and a production pattern determination table (2) for misses without reaching a Reach in FIG.32 are selected. Then the count value of the random number counter for production pattern determination which is renewed

at ST60 is extracted as the random number for production pattern determination to determine the production pattern allocated with a range of random numbers in which said random number is included, as a production pattern to be displayed (ST87).

If the production group 0 is not selected and one of the production groups 1 to 20 is selected ("YES" at ST88), in other words, in the state of a miss after reaching a Reach, as shown in FIG.28, a production pattern determination table (1) for misses after reaching a Reach in FIG.33 and a production pattern determination table (2) for misses after reaching a Reach in FIG.34 are selected. Then the count value of the random number counter for production pattern determination which is renewed at ST60 is extracted as the random number for production pattern determination to determine the production pattern allocated with a range of random numbers in which said random number is included, as a production pattern to be displayed (ST89).

If one of the production groups other than 0 to 20, or the production groups 21 to 37 is selected ("NO" at ST88), in other words, in the state of a big hit, as shown in FIG.28, a production pattern determination table (1) for big hit in FIG.35 and a production pattern determination table (2) for big hit in FIG.36 are selected. Then the count value of the random number counter for production pattern determination which is renewed at ST60 is extracted as the random number for production pattern determination to determine the production pattern allocated with a range of random numbers in which said random number is included, as a pattern to be displayed (ST90).

As shown in FIG.31 through FIG.36, in the embodiment 252 types of pattern are provided as the production pattern, and those patterns are stored in the ROM within the symbol control circuit board. In these various production patterns, appearing characters, expressions of the characters, true intention designs, words, backgrounds, words upon entering a Reach and types of Reach is previously set in advance and a variety of scenarios are configured by combining them each other.

Now, F1 - F4 in FIGs.31 to 36 represent expressions of respective characters, practical forms of which are shown in FIG.37 and FIG.38. FIG.37 shows varied expression types of male characters and FIG.38 shows varied expression types of female characters. H1   H20 represent true intention designs of respective characters, practical forms of which are shown in FIG.12.

Also, as the display means, a display apparatus configured of an array of a number of LEDs, CRT, plasma display device and electro-luminescence device or the like may be used, as well as liquid crystal display device.

Although the embodiments described are applied to a pachinko game machine, this invention may be also applied to other game machines, such as one including an electrical display device or any imaging device. The player can enjoy the game in a home game machine, using a game program capable to perform pseudo-operations of the pachinko game machine described above. It is also possible to install the program from the recording medium to a general purpose personal computer for example and utilize the personal computer as a game machine.

Also, the special game state may correspond to a great deal of release of coins (or tokens) in a slot machine.

Industrial Applicability

A game machine capable of making it possible for a player to reliably learn the game evolution such as a big hit, a Reach evolution, and a miss even without watching variation-displayed special symbols, by simply watching production displays can be provide. Furthermore, a game machine capable of making it possible for a player to grasp production contents without depriving the player of the pleasure of finding specific production display of information beneficial to the player can be also provided.